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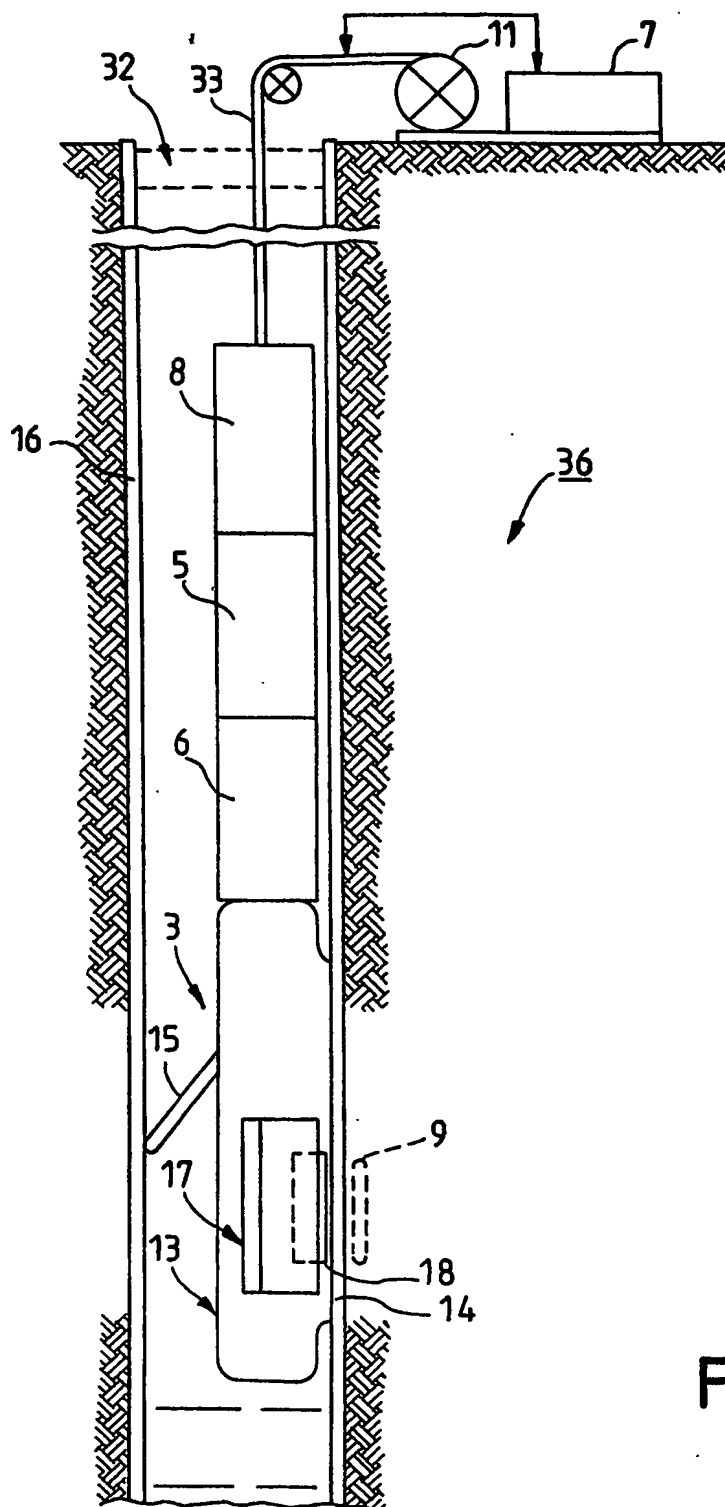


FIG.1

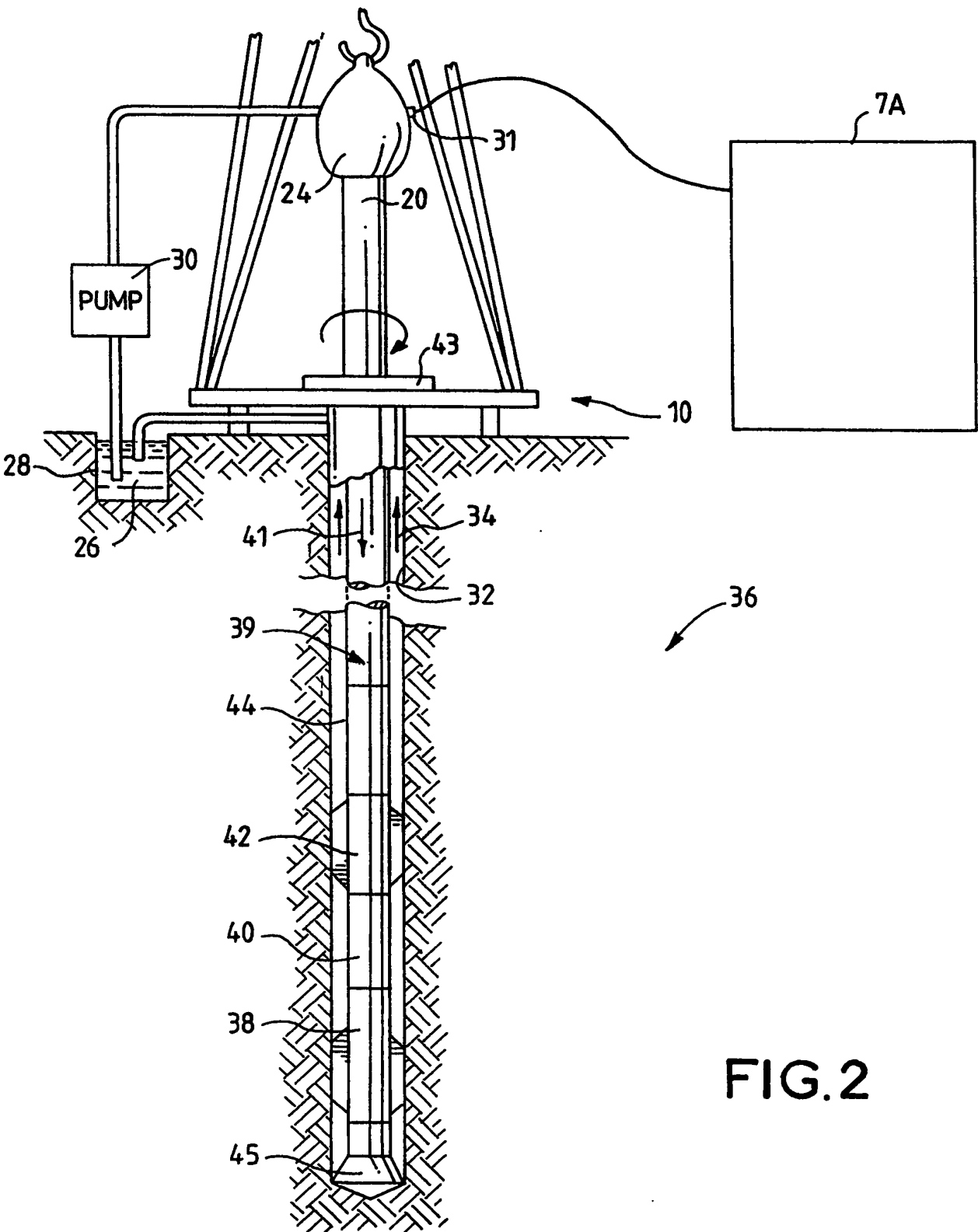
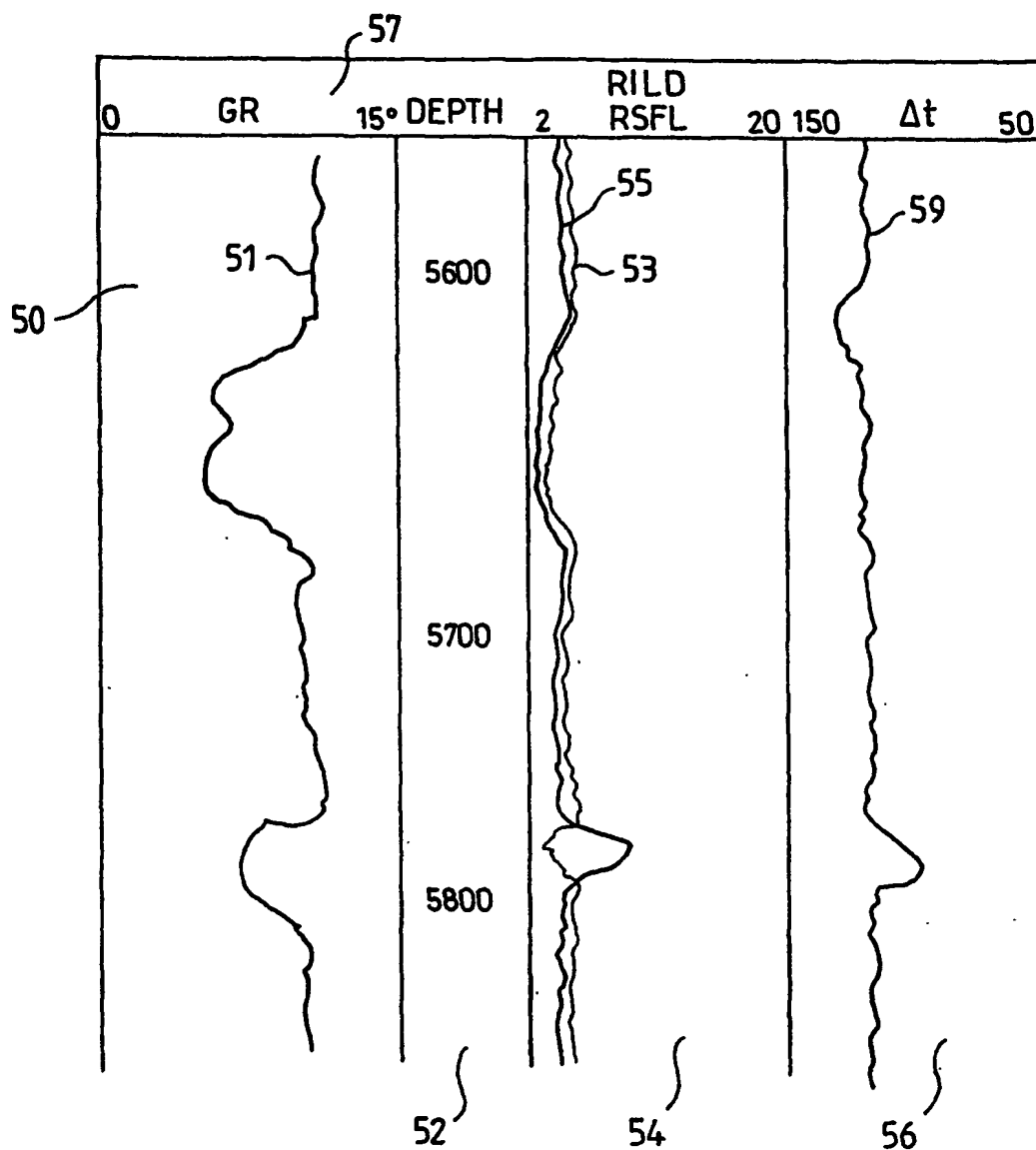


FIG.2



**FIG.3**  
(PRIOR ART)

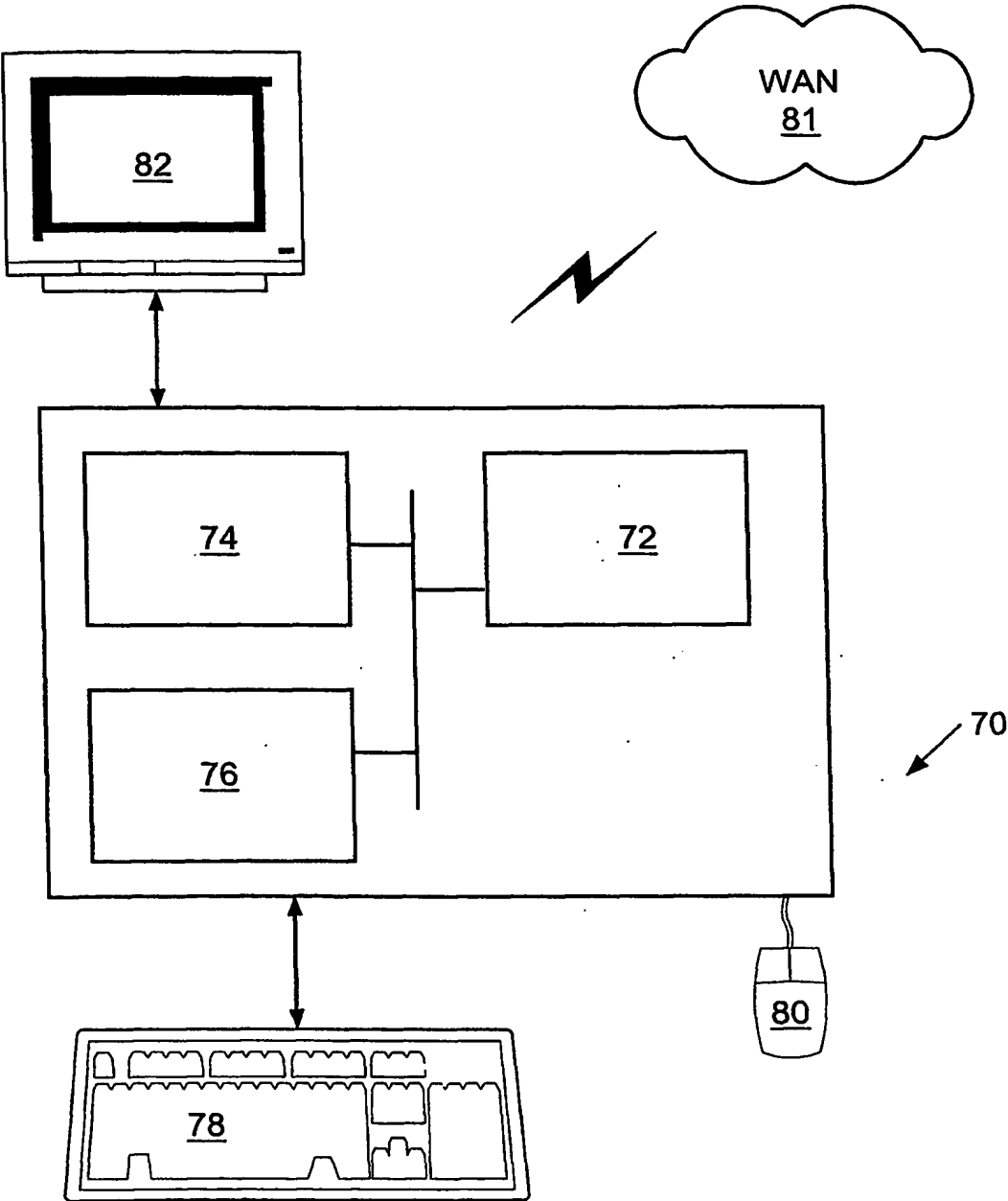


FIG. 4  
(PRIOR ART)

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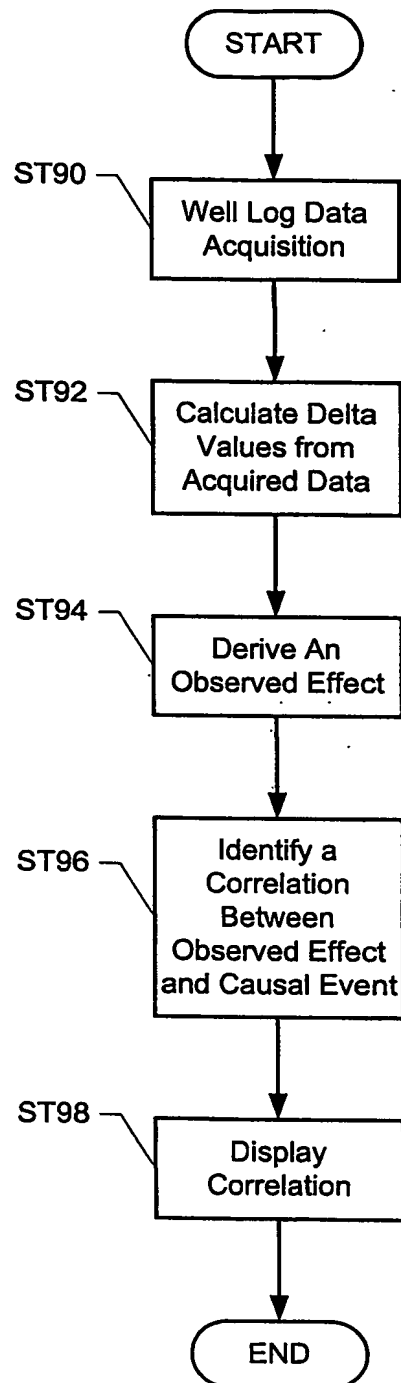


FIG. 5

Observed Effect. Change observed in:	Possible Cause and Diagnostic Measurement																	
	102	change in mud weight/type/composition	change in mud resistivity	mud resistivity measurement	formation activation	change in the background density measurement	change in formation temperature	hole enlargement measurement	caliper measurement	formation fracturing	delta pressure/ECD history/ resistivity profile	invasion depth / profile	resistivity profile	change in tool orientation (if azimuthal measurement)	azimuthal measurement	cuttings buildup	drilling torque and pressure history	
		Gamma Ray	O <sub>108</sub>	N <sub>110</sub>	O <sub>112</sub>	N <sub>114</sub>	O <sub>116</sub>	O <sub>118</sub>	O <sub>120</sub>	O <sub>122</sub>	O <sub>124</sub>							
		Resistivity	N <sub>126</sub>	O <sub>128</sub>	N <sub>130</sub>	O <sub>132</sub>	O <sub>134</sub>	O <sub>136</sub>	P <sub>138</sub>	N <sub>140</sub>	N <sub>142</sub>							
		Neutron	O <sub>144</sub>	N <sub>146</sub>	N <sub>148</sub>	O <sub>150</sub>	O <sub>152</sub>	O <sub>154</sub>	O <sub>156</sub>	O <sub>158</sub>	O <sub>160</sub>							
		Density and PEF	O <sub>162</sub>	N <sub>164</sub>	N <sub>166</sub>	N <sub>168</sub>	O <sub>170</sub>	O <sub>172</sub>	O <sub>174</sub>	O <sub>176</sub>	O <sub>178</sub>							
		Ultrasonic Caliper	O <sub>180</sub>	N <sub>182</sub>	N <sub>184</sub>	N <sub>186</sub>	P <sub>188</sub>	O <sub>190</sub>	N <sub>192</sub>	O <sub>194</sub>	O <sub>196</sub>							
		Sigma	O <sub>198</sub>	N <sub>200</sub>	N <sub>202</sub>	O <sub>204</sub>	O <sub>206</sub>	O <sub>208</sub>	O <sub>210</sub>	O <sub>212</sub>	N <sub>214</sub>							

100

104

FIG. 6

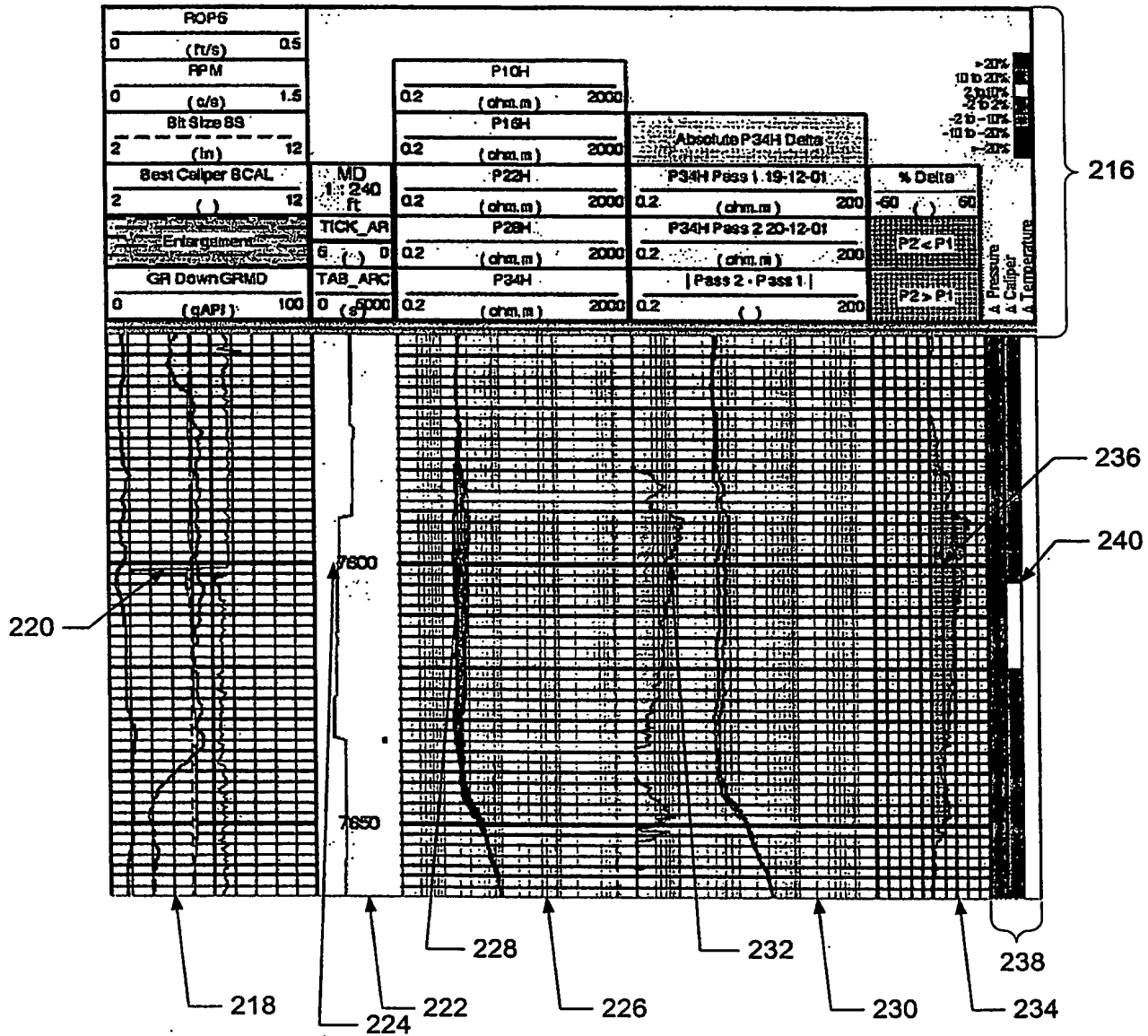


FIG. 7

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